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# Nanoscopic poly(ethylene oxide) strands embedded in semi-interpenetrating methacrylate networks. Preparation method and quantitative characterization by field-gradient NMR diffusometry

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## Abstract

Networks of nanoscopic strands of linear, monodisperse poly(ethylene oxide) embedded in cross-linked methacrylate matrices were prepared. Depending on the choice of matrix constituents, the diameters of these strands can be varied considerably. The samples were characterized by DSC, TEM, SEM, and fringe field gradient NMR diffusometry with respect to the strand diameter. A formalism evaluating diffusive spin-echo attenuation curves based on the tube/reptation model is presented permitting the determination of the tube diameter. Values in the range from 8 to 58 nm were found in accordance with TEM micrographs of shadow-cast freeze-fractured surfaces of the samples.

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